

CLAIMS

What is claimed is:

- 1 1. A method comprising:
 - 2 determining a protocol format in which a packet is formatted based on one or
 - 3 more label values in a header of a MultiProtocol Label Switching (MPLS) formatted
 - 4 packet, wherein label values in a first range indicate a first protocol type and label values
 - 5 in a second range indicate a second protocol type;
 - 6 selecting a physical link from a plurality of physical links based on the one or
 - 7 more label values; and
 - 8 transmitting the packet over the selected physical link.
- 1 2. The method of claim 1 wherein the first protocol type comprises an
- 2 Internet Protocol (IP) and the second protocol type comprises a Layer-2 MAC Protocol .
- 1 3. The method of claim 1 wherein selecting a physical link from a plurality of
- 2 physical links based the one or more label values further comprises performing a hashing
- 3 function on header field values, the hashing function and the header field values selected
- 4 based on the one or more label values.
- 1 4. The method of claim 3 wherein performing a hashing function comprises
- 2 performing a hash on one or more of a source IP address, a destination IP address, an IP

3 type, a source port number, a destination port number, if the data carried by the packet is
4 Internet Protocol (IP) formatted.

1 5. The method of claim 3 wherein performing a hashing function comprises
2 performing a hash on one or more of a destination MAC address, a source MAC address,
3 if the data carried by the packet is Layer-2 MAC Protocol formatted.

1 6. A network switch comprising:
2 an ingress interface having one or more ports to receive network traffic from one
3 or more external sources;
4 an egress interface having one or more ports to transmit network traffic to one or
5 more external destinations; and
6 switching control circuitry coupled between the ingress interface and the egress
7 interface, the switching control circuitry to analyze one or more labels in a header of a
8 MultiProtocol Label Switching (MPLS) encapsulated packet received via one of the
9 ports of the ingress interface, the switching control circuitry to determine an underlying
10 protocol format in which the data of the MPLS encapsulated packet is formatted based on
11 values stored in the one or more labels, the switching control circuitry further to select a
12 physical link from the egress port over which the MPLS encapsulated packet is to be
13 transmitted based on the one or more labels.

1 7. The network switch of claim 6 wherein values of the one or more labels
2 correspond to a first range if the underlying protocol format is Internet Protocol (IP)

3 formatted data and one or more of the label values correspond to a second range if the
4 underlying protocol format is Layer-2 MAC Protocol formatted data.

1 8. The network switch of claim 6 wherein the switching control circuitry
2 performs a hash on one or more of a source IP address, a destination IP address, an IP
3 type, a source port number, a destination port number, if the data carried by the packet is
4 Internet Protocol (IP) formatted.

1 9. The network switch of claim 6 wherein the switching control circuitry
2 performs a hash on one or more of a destination MAC address, a source MAC address, if
3 the data carried by the packet Layer-2 MAC Protocol formatted.

1 10. A network switch comprising:
2 an ingress interface having one or more ports to receive data from one or more
3 external sources;
4 an egress interface having one or more ports to transmit data to one or more
5 external destinations;
6 a backplane having multiple physical links coupled to the ingress interface and to
7 the egress interface, the backplane to carry data between the ingress interface and the
8 egress interface; and
9 switching control circuitry coupled to the ingress interface, the switching circuitry
10 to analyze one or more labels in a header of a MultiProtocol Label Switching (MPLS)
11 encapsulated packet received via one or the ports of the ingress interface, the switching

12 control circuitry to determine an underlying protocol format in which the data of the
13 MPLS encapsulated packet is formatted based on values stored in the one or more labels,
14 the switching control circuitry further to select one or more physical links of the
15 backplane over which the MPLS encapsulated packet is to be transmitted to the egress
16 interface based on the one or more labels.

1 11. The network switch of claim 10 wherein values of the one or more labels
2 correspond to a first range if the underlying protocol format is Internet Protocol (IP)
3 formatted data and one or more of the label values correspond to a second range if the
4 underlying protocol format is Layer-2 MAC Protocol formatted data.

1 12. The network switch of claim 10 wherein the switching control circuitry
2 performs a hash on one or more of a source IP address, a destination IP address, an IP
3 type, a source port number, a destination port number, if the data carried by the packet is
4 Internet Protocol (IP) formatted.

1 13. The network switch of claim 10 wherein the switching control circuitry
2 performs a hash on one or more of a destination MAC address, a source MAC address, if
3 the data carried by the packet Layer-2 MAC Protocol formatted.

1 14. An apparatus comprising:
2 means for determining a protocol format in which a packet is formatted based on
3 one or more label values in a header of a MultiProtocol Label Switching (MPLS)

4 formatted packet, wherein label values in a first range indicate a first protocol type and
5 label values in a second range indicate a second protocol type; and
6 means for selecting a physical link from a plurality of physical links based on the
7 one or more label values.

1 15. The apparatus of claim 14 wherein the first protocol type comprises an
2 Internet Protocol (IP) and the second protocol type comprises a Layer-2 MAC Protocol.

1 16. The apparatus of claim 14 wherein the means for selecting a physical link
2 from a plurality of physical links based the one or more label values further comprises
3 means for performing a hashing function on header field values, the hashing function and
4 the header field values selected based on the one or more label values.

1 17. An article comprising a machine-accessible medium having stored thereon
2 sequences of instructions that, when executed, cause one or more electronic systems to:
3 determine a protocol format in which a packet is formatted based on one or more
4 label values in a header of a MultiProtocol Label Switching (MPLS) formatted packet,
5 wherein label values in a first range indicate a first protocol type and label values in a
6 second range indicate a second protocol type; and
7 select a physical link from a plurality of physical links based on the one or more
8 label values.

1 18. The article of claim 17 wherein the first protocol type comprises an
2 Internet Protocol (IP) and the second protocol type comprises a Layer-2 MAC Protocol.

1 19. The article of claim 17 wherein the sequences of instructions that cause the
2 one or more electronic systems to select a physical link from a plurality of physical links
3 based the one or more label values further comprises sequences of instructions that, when
4 executed, cause the one or more electronic systems to perform a hashing function on
5 header field values, the hashing function and the header field values selected based on the
6 one or more label values.

1 20. The article of claim 19 wherein the sequences of instructions that cause the
2 one or more electronic systems to perform a hashing function comprises sequences of
3 instructions that, when executed, cause the one or more electronic systems to perform a
4 hash on one or more of a source IP address, a destination IP address, an IP type, a source
5 port number, a destination port number, if the data carried by the packet is Internet
6 Protocol (IP) formatted.

1 21. The article of claim 19 wherein the sequences of instructions that cause the
2 one or more electronic systems to perform a hashing function comprises sequences of
3 instructions that, when executed, cause the one or more electronic systems to perform a
4 hash on one or more of a destination MAC address, a source MAC address, if the data
5 carried by the packet is Layer-2 MAC Protocol formatted.

1 22. A network data signal embodied in a data communications medium shared
2 among a plurality of network devices comprising sequences of instructions that, when
3 executed, cause one or more electronic systems to:
4 determine a protocol format in which a packet is formatted based on one or more
5 label values in a header of a MultiProtocol Label Switching (MPLS) formatted packet,
6 wherein label values in a first range indicate a first protocol type and label values in a
7 second range indicate a second protocol type; and
8 select a physical link from a plurality of physical links based on the one or more
9 label values.

1 23. The network data signal of claim 22 wherein the first protocol type
2 comprises an Internet Protocol (IP) and the second protocol type comprises a Layer-2
3 MAC Protocol.

1 24. The network data signal of claim 22 wherein the sequences of instructions
2 that cause the one or more electronic systems to select a physical link from a plurality of
3 physical links based the one or more label values further comprises sequences of
4 instructions that, when executed, cause the one or more electronic systems to perform a
5 hashing function on header field values, the hashing function and the header field values
6 selected based on the one or more label values.

1 25. The network data signal of claim 24 wherein the sequences of instructions
2 that cause the one or more electronic systems to perform a hashing function comprises

3 sequences of instructions that, when executed, cause the one or more electronic systems
4 to perform a hash on one or more of a source IP address, a destination IP address, an IP
5 type, a source port number, a destination port number, if the data carried by the packet is
6 Internet Protocol (IP) formatted.

1 26. The network data signal of claim 24 wherein the sequences of instructions
2 that cause the one or more electronic systems to perform a hashing function comprises
3 sequences of instructions that, when executed, cause the one or more electronic systems
4 to perform a hash on one or more of a destination MAC address, a source MAC address,
5 if the data carried by the packet is Layer-2 MAC Protocol formatted.